DOCUMENT RESUME

ED 189 097 SP 016 421

TITLE Teacher Supply and Demand in Public Schools, 1979.
INSTITUTION National Education Association, Washington, D.C.
PUB DATE 79
NOTE 16p.
AVAILABLE FROM NEA Distribution Center, The Academic Bldg., Saw Mill Rd., West Haven, CT 06516 (Stock No. 3079-6-10, $4.75).

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Beginning Teachers: *Labor Market: *Public Schools: *Teacher Employment: *Teacher Supply and Demand: *Trend Analysis

ABSTRACT

The following topics are covered in this report: 1) supply of graduates completing preparation to enter teaching, 2) supply of beginning teachers, 3) supply of qualified former teachers, 4) demand for new teachers, 5) demand for minimum quality, 6) demand for beginning and re-entering teachers, 7) teacher supply compared to demand, and 8) future trends. (JD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED189097

nea helping teachers teach
RESEARCH MEMO
National Education Association
1201 Sixteenth Street, N.W. • Washington, D.C. 20036

Teacher Supply and Demand in Public Schools, 1979

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY
G. Felton

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

SP016421

NATIONAL EDUCATION ASSOCIATION

WILLARD H. McGUIRE, *President*
BERNIE FREITAG, *Vice-President*
JOHN T. McGARIGAL, *Secretary-Treasurer*
TERRY E. HERNDON, *Executive Director*

NEA RESEARCH

Frank W. Kovacs, *Director*

William E. Dresser
Assistant Manager
Graphics

Andrew H. Griffin
Manager
Research Services

Peg J. Jones
Manager
Research Services

Norma W. Plater
Assistant Manager
Administrative Services

Simeon P. Taylor, III
Manager
Research Services

Donald P. Walker
Manager
Research Services

Duvon G. Winborne
Manager
Computer and Statistical Programming

TEACHER SUPPLY AND DEMAND IN PUBLIC SCHOOLS, 1979

William S. Graybeal
Project Director

Sales copies of this publication in combination with *Population Trends and Their Implications for Association Planning, 1980*:

NEA members —$2.00 (Stock No. 3079-6-00)
Nonmembers —$4.75 (Stock No. 3079-6-10)

Payment must accompany all orders except for those on your official institutional purchase order forms; no orders can be billed for less than $10. Shipping and handling charges will be added to all billed purchase orders. NEA member discount: 10-49 copies, 10%; 50-99 copies, 15%; 100 or more copies, 20%. Order from the **NEA Distribution Center, The Academic Building, Saw Mill Road, West Haven, CT 06516.**

Reproduction: No part of this report may be reproduced in any form without written permission from NEA Research, except by NEA-affiliated associations. Any reproduction of the report materials must include the usual credit line and the copyright notice. Address communications to Nancy M. Greenberg, Editor.

Copyright © 1980 by the
National Education Association
All Rights Reserved

TEACHER SUPPLY AND DEMAND IN PUBLIC SCHOOLS, 1979

- The supply of graduates completing preparation to enter teaching in 1979 (172,902 graduates) is smaller by 4.7 percent than the number reported for 1978. This is the seventh consecutive year that the number completing preparation to enter teaching has decreased from the all-time high of 317,254 in 1972.
- The 493,450 beginning teachers needed to raise the quality of public school programs and staffing in fall 1979 to minimum levels is 359,950 more beginning teachers than are available from the 1979 graduating class of prospective teachers.
- The number of prospective teachers from the 1979 graduating class seeking teaching positions (133,500 persons) exceeds by 58,750 the number of teaching positions actually open to them (74,750 positions).
- State department of education personnel report the following teacher supply-demand conditions for fall 1979:

  9 states—Substantial or some shortages of qualified applicants
  4 states—Sufficient, some excess, or substantial excess of applicants
  37 states—Shortages in some assignments and surpluses in some assignments

- Employment in teaching positions in the fall following graduation is reported for 50.1 percent of the 1978 graduates prepared to enter teaching. Sixteen years ago employment in teaching positions was reported for 74.4 percent of 1962 graduates completing preparation to enter teaching.
- Teaching assignments in which the supply is least adequate are mathematics, natural and physical sciences, agriculture, special education, industrial arts, distributive education, and vocational-technical subjects. Assignments in which the supply is most adequate are social sciences, physical and health education, art, foreign languages, home economics, and elementary regular instruction.
- Deterioration in the attractiveness of teaching jobs has been a major cause of shortages in assignments having the least adequate supply.
- The number of job openings for elementary school teachers will increase for several years beginning in 1983-84. As a result, employment prospects for elementary school teachers are likely to improve in the mid-1980's.

Statistical information about the supply and demand for public school teachers in 1979 has been collected by NEA Research from institutions that prepare persons for entry into teaching and from state departments of education. The continuing assistance of these institutions, state education agencies, and state education associations has made possible this thirty-second annual study.

See page 14 for definitions of terms used in this study.

Supply of Beginning Teachers

During the 1978-79 session every institution that prepares persons for meeting the minimum certification requirements for initial entry into public school teaching reported the number of graduates completing preparation to enter teaching. The institutions supplied both the actual number graduating in 1978 and the number expected to graduate in 1979. Included are all graduates with at least a bachelor's degree completing minimum requirements for teacher certification for the first time.

The estimated total number of graduates completing preparation to enter assignments in elementary, secondary, or special education classrooms is 172,902 in 1979, a decrease of 4.7 percent from the 181,348 graduates actually reported for 1978. It is lower by 45.5 percent than the all-time high of 317,254 graduates completing preparation to enter teaching in 1972.

The total number completing preparation to enter teaching in 1979 (excluding persons prepared to enter library science positions) represents 17.3 percent of the estimated total number of graduates receiving the bachelor's and first professional degree. Between 1960 and 1972 the numbers of graduates completing preparation to enter teaching (including library science) represented between 33.5 percent and 36.3 percent of the total number of graduates receiving the bachelor's and first professional degree.

The total number completing preparation for entry into elementary school assignments in 1979 (65,536 graduates) is 5.6 percent lower than the number completing similar preparation in 1978 (69,441). This is the seventh year that the number completing preparation for entering elementary school assignments has been lower than the all-time high of 128,613 graduates reported in 1972.

The total number completing preparation to enter teaching in secondary school assignments in 1979 is 84,060 graduates (down 5.1 percent from the 88,537 reported for 1978). This is the eighth year that the numbers completing preparation for entry at the secondary level have been lower than the all-time high of 174,759 reported in 1971.

The number completing preparation to enter teaching in special education assignments at either the elementary or secondary school level is 23,306 graduates in 1979, a decrease of 0.3 percent from the 23,370 graduates completing similar preparation in 1978. The number in the 1979 class completing preparation in special education is three times the number completing this type of preparation 10 years ago (7,845 graduates were reported in 1969) and is more than five times the number reported 13 years ago (4,380 graduates were reported in 1966).

Each November institutions are requested to estimate how many students will graduate with minimum certification qualifications for entering public school teaching at the end of the current academic year, the actual number graduating with these qualifications the previous year, and placement information for those graduating the previous year. The number of graduates reported in the annual summary is the estimate for the year of the survey. During the past 10 years the actual number of graduates reported one year after the estimates for a given year has ranged from 8.1 percent below to 2.1 percent above the estimates published, with a median of 5.7 percent below the estimates.

The estimated numbers of students graduating with minimum certification qualifications in 1979 are lower than the similarly estimated numbers for 1978 by 4.9 percent for persons prepared for elementary school assignments; 5.5 percent, secondary; 0.6 percent, special education; and 4.7 percent for the total numbers prepared to enter teaching. This results largely from a correction of multiple reporting of graduates in Texas completing requirements for more than one assignment area.

The statistics obtained through this survey procedure may be conservative estimates of the number of graduates completing minimum certification requirements because—

- No estimates are included for the few small institutions that did not respond to the annual survey.
- The reports of some universities reflect only their schools of education (graduates of liberal arts and some professional schools meeting minimum requirements for teacher certification are not reported).
- The survey questionnaire may not have been sent to some institutions that have graduates meeting minimum certification requirements.

A recent American Council on Education survey of a sample of teacher education institutions, which used essentially the same definitions as the present study, estimated that approximately 20 percent more graduates were prepared to enter teaching in 1978 and in 1979 than are reported in the present study. On the other hand, periodic National Center for Education Statistics (NCES) studies of samples of all college graduates found that the numbers of graduates who were aware that they met minimum certification requirements for teaching were the same as the NEA Research estimate in 1972, 4 percent lower in 1975, and 9 percent lower than the NEA estimate in 1977.

About 1 teacher education graduate in 4 is male (27.3 percent) in 1979; this is slightly lower than the

percents reported between 1963-64 and 1976-77 but is considerably below the 36.2 to 44.2 percent reported between 1951-52 and 1961-62. The proportion of *all* public school teachers who are male is 33.2 percent in 1979-80 and has ranged between 33.2 and 33.8 percent since 1969-70. The percent of all teachers who are male was 24.6 percent in 1953-54, 31.1 percent in 1963-64, and 33.8 percent in 1973-74.

The states differ in the total number of graduates completing preparation to enter regular teaching assignments and in the percent change over the past year in the number completing preparation to teach. The numbers completing preparation in 1979 range from 71 in Alaska to 13,023 in Texas. Thirteen states report fewer than 1,000 graduates completing preparation to enter teaching and four states report 10,000 or more. Eight states report an increase of at least 5 percent in the number of graduates prepared to teach in 1979 over the number in 1978 (Alaska, Delaware, South Carolina, Washington), and seven states report a decrease of at least 10 percent over this period (Connecticut, Kansas, Massachusetts, Montana, Nevada, New York, North Dakota, Wisconsin).

Proportion of Graduates Applying for Jobs—Table 1 (column 2) shows the estimated number of graduates completing preparation to teach in each major assignment classification in public schools based upon an assumption that the distribution of graduates among assignments is the same in 1979 as in 1974. The number reported for a given assignment classification may be a minimum estimate because many graduates have completed preparation to enter more than one assignment. The institutions report each graduate only once and arbitrarily assign a classification to each graduate who has multiple assignment options.

Typically, many persons completing preparation to enter public school teaching do not obtain positions during the subsequent year. The unmeasured and interrelated effects of many factors make it impossible to estimate the precise number who will actively seek employment in teaching immediately after graduation. Some of these factors include the economic status of teaching jobs compared to that of other positions open to qualified graduates, attractiveness of working conditions in teaching positions compared to that of other jobs open to qualified graduates, and extent that publicity about the job shortage for teachers may reduce the numbers of graduates willing to invest time and resources in applying for a scarce position-vacancy.

The percent of qualified graduates obtaining teaching positions during a period of general shortages of qualified teachers provides a useful base for estimating the percent of present graduates expected to seek teaching positions if working conditions and salaries are reasonably attractive. This estimate is likely to be conservative because even during the period of general shortages, the supply of applicants exceeded the number of openings in some assignment areas (notably in social studies, which affects a significant number of graduates prepared to teach) and follow-up information was not available for 10 percent of the graduates (some may have found teaching positions without notifying their college placement office). Also, depending upon the current effects of the above factors, projections from this base may be higher or lower than the actual percents of qualified graduates actively seeking teaching positions.

A recent NCES study of bachelor's- or master's-degree graduates indicates that only 77.0 percent of those completing minimum requirements for teacher certification in 1976-77 applied for a teaching position. A similar 1974-75 study reveals that the average annual salary of bachelor's-degree graduates employed as teachers ($8,300) was lower than all but one of the 17 occupational groupings into which data were summarized and was far below the overall average salary of $9,400. This suggests that for many graduates the decision to apply for a teaching position may be second choice and may follow an unsuccessful bid for other employment. An additional "supply" of qualified applicants may be expected to seek teaching positions actively if teachers' salaries become more competitive with those in other occupations entered by new college graduates.

Recent deterioration in attractiveness of salaries for beginning teachers is evident when average beginning salaries for public school teachers with a bachelor's degree are compared with average salary offers made by private industry to college graduates with a bachelor's degree (as published in the Endicott* reports). In 1978-79 the average starting salary of public school teachers with a bachelor's degree was $10,138, which is lower than the average salary offer made by approximately 200 companies to bachelor's-degree graduates in every one of the 10 subject fields. Beginning salaries ranged from $11,952 to $17,172 for June 1978 bachelor's-degree graduates among these 10 subject groupings.

The index relationship of the average 1978 starting salary offered by private industry to that offered to beginning school teachers ranges from 163.5 for

*Annual reports of Frank S. Endicott, Director of Placement Emeritus, Northwestern University, Evanston, Ill.

engineering graduates to 134.6 for economics-finance graduates. The index relationship of average salaries in all nine fields having data reported is higher in 1978-79 than in 1975-76 (the earliest year for which comparable salary offer information in the Endicott surveys is available). The net result is that the 1978 salaries of beginning teachers are less competitive than they were in 1975.

Survey reports and news releases about unusually severe shortages of teachers in mathematics, agriculture, sciences, industrial arts, and other vocational-technical areas point to low salaries in teaching (compared to other employment available to teacher education graduates) as a primary factor in reducing both the supply and the quality of the supply of graduates applying for teaching jobs in these assignments. In at least three states over 60 percent of the graduates prepared to teach industrial arts entered jobs outside of teaching. Another survey reports that only 54.9 percent of the 1979 graduates prepared to teach vocational agriculture entered teaching in this assignment and that this is lower than the entry rates reported for all but three (1970 to 1972) of the past 14 years. Also, this survey reports that in six states fewer than 40 percent of the qualified 1979 graduates entered vocational agriculture teaching assignments. The average salary offered by private industry to bachelor's-degree graduates in June 1979 in mathematics ($15,000) is higher than the average 1979-80 salary paid to *all* teachers in each of 26 states. In 1975 this average salary offer was higher than the average salary paid to teachers in each of 20 states.

The number of graduates seeking employment in teaching in fall 1979 if attractive positions are available is provided in Table 1 (column 3). The application rate for teaching jobs estimated for graduates prepared to teach at the elementary school level is 84.5 percent. In 1958 when entry rates were near their peak and follow-up information was reported for a very high proportion of graduates prepared to enter teaching, 83.3 percent entered teaching positions immediately after graduation and an additional 1.7 percent were seeking a teaching job. The job application rate similarly estimated for graduates prepared to teach in secondary schools is 71.5 percent. In 1962 immediate employment in teaching positions was reported for 69.2 percent of graduates prepared to teach, and an additional 1.5 percent were seeking a teaching job.

The job application rate estimated for graduates prepared to teach in special education assignments is the overall average (77.0 percent) of the rates estimated for elementary and secondary levels.

The job application rates estimated for 1979 may be higher than the actual rates (particularly in such assignment areas as mathematics and sciences) as a result of graduates' awareness of the recent deterioration in teachers' salaries, plus the evidence of some improvement in the job market for college graduates in other occupations. The estimated rates may be conservative as an outcome of continuing reaction to the annual teacher surplus, such as the increased screening of students who are preparing to teach, increased student awareness of the tight job market for teachers, and greater commitment to teaching as a career among present graduates.

The number of jobs open to beginning teachers has been about half that of the number of graduates seeking teaching jobs during six of the past eight years. Although the number of these earlier graduates who were unable to locate an attractive teaching position immediately after graduation and who are now seeking jobs as beginning teachers cannot be estimated accurately, evidence suggests that about one-fifth of beginning teachers come from this status. Many of these have now completed graduate preparation and/or have had experience as substitute teachers. The presence of at least some qualified applicants from this source makes it likely that the actual number of qualified prospective beginning teachers is greater than the number estimated through use of the entry rates listed above for the 1979 graduating class.

Supply of Qualified Former Teachers

Some teachers who have left their positions may be expected to return to teaching. In addition to those having leaves of absence, a significant number want to return to the classroom following an interruption related to educational, family, health, and/or personal interests.

The U.S. Bureau of the Census estimates that the number of elementary and secondary school teachers in the labor reserve who had completed at least four years of college was 340,460 in 1960 and 523,140 in 1970. Assuming that the same percents of the teaching staff during the preceding 10-year period have entered the labor reserve, this supply probably has grown to 658,000 persons in fall 1979. (In addition to the number of teachers estimated in the labor reserve in 1970 were about 29,200 *unemployed* experienced teachers between the ages of 20 and 64.)

The number of former teachers who may be expected to seek active employment is difficult to estimate. The number of former teachers who reentered teaching in 1960-61 represented 18.3 percent of the pool of elementary-secondary teachers in the labor reserve in 1960. Applying this percentage to

the 658,000 persons estimated in this pool in 1979, at least 120,000 experienced former teachers having a minimum of a bachelor's degree may be assumed to have been seeking employment in public schools in fall 1979 if attractive positions were available, probably two-thirds (79,200) of these at the elementary school level.

Demand for New Teachers

The demand for new teachers may be viewed from two perspectives: the number of teachers *needed* and the number of teaching *positions that will be filled.* Both types of estimates are valuable in planning for continued improvements in the quality of public schools. These estimates show the labor implications of long-term goals for school improvement and the extent that qualified personnel is available to support immediate steps to improve the quality of education.

The number of teachers *needed* (Quality Criterion Estimate of demand) shows the demand for enough teachers to attain a minimum level of quality without consideration of obstacles to attaining this standard immediately. The number of teaching positions *that will be filled* (Adjusted Trend Criterion Estimate of demand) shows the demand for enough teachers to continue the recent annual trends toward improvement in the quality of school programs and services.

Demand for Minimum Quality

Table 2 (see p. 13) summarizes the number of new teachers needed to staff programs and services if the quality of public schools were immediately raised to minimum levels. The estimate—based upon several characteristics of quality in public education for which some statistical estimates of current status are available—does not necessarily reflect but is consistent with official NEA policy or objectives. The total demand derived from the accumulation of the components is a general estimate because (a) the statistical data underlying the estimates are not precise, (b) the estimates are intended to be conservative, and (c) teachers displaced by achievement of one demand category would qualify for placement in positions opened by a different demand category.

The number of teachers needed to attain a minimum level of quality in public education would be much larger if it included the staff-size implications of other desirable changes in programs and services, such as the following.

- Providing experiences to develop literacy and minimum competence among those who have reached the upper grade levels or who have left the schools without attaining basic learnings.
- Introducing programs to ensure the continued enrollment of the dropout-prone students enrolled in the lower grades and the estimated 850,000 persons age 14-17 or the 1.3 million persons age 18-19 who have *not* graduated from high school and are not currently enrolled in school.
- Providing more specialists to give individualized instruction to children with unique problems in mastering basic learnings and skills.
- Improving the extent and type of in-service professional growth programs for teachers (sabbatical and educational leaves, released time to confer with others who have comparable assignments, released time to participate in short courses directed to specific needs, etc.).
- Providing more opportunity for releasing some teachers part time to explore improved instructional methods and materials.

The components of the Quality Criterion Estimate of demand may be expanded to include the above considerations relating to high quality in public school programs and services after statistical estimates of current and desirable status are available.

Enrollment and Staff Ratio Changes—NCES estimates that in fall 1979 the number of full-time and part-time public school teachers decreased by 30,000. In fall 1979 NEA Research estimates that the number of elementary public school teachers decreased by 5,332 and the number of secondary school teachers decreased by 6,236 from the number employed in 1978-79 (making a total decrease of 11,568 in fall 1979). These estimates indicate the 1979-80 session is providing employment for 1,181,713 elementary and 1,002,610 secondary teachers, a total of 2,184,323 teachers in public schools.

The NEA Research estimate of change in the number of teachers is used in the remainder of this Research Memo to indicate the number of new teachers to be employed for positions related to enrollment changes and normal staff ratio improvements in public schools. Because some positions included will be used to improve the quality of public school programs and services, this demand component may overlap a small part of the demand

for new teachers needed to improve specific aspects of educational quality estimated in other components of the Quality Criterion Estimate of teacher demand.

Teacher Turnover—The decreasing rates of voluntary separation from active employment probably stem from an increased awareness of the difficulties in securing employment following an interruption in service. On the other hand, many who would like to continue to teach following a move to a new location may not be able to secure employment readily. Studies of teacher turnover made by NCES and the sampling data collected by NEA Research indicate that probably 129,550 positions were opened to new teachers in fall 1979 by the separation (for at least one year) of 5.9 percent of the teachers employed in the 1978-79 session.

A relatively low estimate of the turnover rate is used again this year despite (a) steady growth in the proportions of teachers expressing low morale and (b) higher turnover rates reported in some locales. Apparently, the continuing tight job market for college graduates along with an abundant supply of teachers for attractive teaching jobs are limiting teacher mobility and turnover. No recent national estimates are available, but state departments of education in Delaware, Illinois, and Michigan report reductions in teacher turnover rates during the 1970's (ranging between 10 and 12 percent in 1973-74 and between 7.5 and 9.5 percent in 1977-78). A study of job survival rates of beginning teachers in the St. Louis metropolitan area shows a smaller proportion leaving teaching each year between 1968 and 1976. The numbers of beginning teachers reported by states supplying teacher demand data for the present study have not increased. Also, in the annual NEA Research survey of a sample of public school teachers, the percent of teachers who are beginning teachers has not increased.

Temporary Replacement of Teachers with Substandard Qualifications—In the absence of valid statistics on the number of currently employed teachers without minimum teaching qualifications, the minimum educational requirement for qualified teachers is assumed to be the completion of the bachelor's degree. Special circumstances supporting the continued employment of those without a bachelor's degree reduce the validity of the estimate of the number who should be replaced. Also, the replacement of those teachers who lack only one or two years of college may only be on a short-term basis while they return to school to complete their degree.

Data from a sample survey of public school teachers show that 0.1 percent of elementary and 0.4 percent of secondary teachers in 1978-79 lacked the bachelor's degree. It is assumed that 20 percent of those without the degree will have either resigned or completed degree requirements during the 1978-79 session, resulting in an estimated 4,200 teachers without a bachelor's degree who should be replaced in fall 1979 (for at least a short term) by qualified teachers.

Reduction of Overcrowded Classes—A nationwide 1978-79 NEA Research survey of a sample of public school teachers provides an estimate of the distribution of teachers by their average class size. These percentage distributions, applied to the total number of teachers employed in 1978-79 to estimate how many may have been assigned extremely large classes, indicate that 312,750 additional teachers are needed in fall 1979 to reduce maximum class size to 24 pupils. The number of assignments in which larger numbers of students than indicated by this standard may be acceptable probably is more than offset by the number of assignments in which the class size should be far smaller than this maximum.

The most productive approach to improving the quality of public education probably would be to achieve the staff requirements of this demand component. The problems most frequently encountered by teachers directly relate to oversize classes. Also, for many instructional objectives and assignments class size makes a significant difference in the quality and effectiveness of instruction.

Larger Numbers Enrolled in Special Education—At least 64,000 additional teachers are needed to provide special education for all school-age children who require it. This estimate of added positions to be filled in 1978-79 is projected by the Office of Special Education, U.S. Department of Education.

Special education includes the services required for "all children with physical, mental, or emotional impairments that are severe enough so that these children need special educational services to achieve an educational level consistent with their basic abilities."

Larger Numbers Enrolled in Kindergarten and Nursery School—Minimally, 12,400 new teachers are needed to provide kindergarten for the same proportion of five- and six-year-old children as the proportion of seven-year-olds now enrolled in school. This does not include the number of new teachers needed to replace present kindergarten teachers with substandard qualifications, to replace

present kindergarten teachers who interrupt or terminate their careers, or to improve the pupil-teacher ratio. The U.S. Bureau of the Census estimates that in fall 1978 more than 254,000 five- and six-year-old children were not enrolled in school.

Reduction in the Number of Misassigned Teachers—At least 51,100 new teachers are needed to reduce the impact of the misassignment of elementary and secondary school teachers. A 1975-76 study shows that 4.3 percent of elementary and 7.8 percent of secondary teachers that year were teaching full time in an assignment different from their major field of preparation. In 1978-79 these rates are estimated to have fallen to 3.5 percent and 6.0 percent, respectively; and new teachers are needed to allow the reassignment of half of the misassigned teachers.

The improved supply of teachers should be steadily decreasing this problem. However, the above estimate is conservative because it does not include the number of new teachers needed to reassign for at least part of the day the more than 173,000 teachers who are teaching at least half time but not full time in assignments outside their major field of preparation.

Enlargement of School Offerings—At least 51,000 new teachers are needed to enlarge elementary and secondary school offerings, which some systems have severely curtailed as a result of financial cutbacks. Sometimes, instruction has not been offered in subjects widely accepted as basic to public education.

At least 1,000 elementary school teachers are needed to enlarge offerings in the 4,000 school systems reporting the absence of elementary school instruction in art, music, health, and/or physical education in 1973-74.

At least 50,000 new teachers are needed to enlarge the scope of secondary school offerings. In 1975-76 more than 11,000 systems reported the absence of industrial arts and/or a work-study program. Providing two teachers for each of these courses alone would require more than 44,000 new teachers. At least 4,800 school systems provide limited or no offerings in home economics and/or instrumental music. It is not known how many new teachers are needed to reinstate additional school offerings cutback for financial reasons.

Actual Demand

The number of positions *that will be filled* by new teachers in fall 1979 is the sum of the positions created by enrollment-staff ratio trends and the positions opened by the separation of teachers employed last year. These are the first two components of the Quality Criterion Estimate summarized above. Employment in teaching is virtually assured for 118,000 new teachers in fall 1979 (64,750 elementary; 53,250 secondary). If improved school staffing were implemented, these numbers would, of course, be increased.

Demand for Beginning and for Re-Entering Teachers

The preceding estimates have been directed to the demand for *new* teachers. A *new* teacher is a person entering or re-entering active status who was not employed as a full-time teacher during the preceding school year. A *beginning* teacher is a person entering active employment as a full-time teacher for the first time. Therefore, the demand for *new* teachers is the sum of the demand for *beginning* and the demand for *re-entering* teachers.

The "mix" of beginning and experienced re-entering teachers employed by local school systems is influenced by such factors as the supply of beginning teachers, financial constraints that may lead the system to choose the least expensive applicants, and characteristics of teachers who are continuing their employment. As a result the demand for beginning versus re-entering teachers cannot be estimated with great accuracy.

Studies of teacher turnover and characteristics of employed teachers indicate that the number of positions filled by unemployed experienced teachers in fall 1979 will equal 2.2 percent of the total number of elementary teachers and 1.7 percent of the total number of secondary teachers in 1978-79.

Applying these projected rates of re-entry to the total number of teachers in 1978-79, 26,100 former elementary and 17,150 former secondary teachers will re-enter active employment as teachers in fall 1979 following an interruption of at least one year.

Teacher Supply Compared to Demand

The preceding estimates (summarized in Table 3) show that in fall 1979 the supply of new teachers exceeded the number of available positions by 135,500 but was smaller by 359,950 than the number needed to raise school programs and services to minimum quality levels. The number of 1979 graduates seeking positions was more than half-again larger (178.6 percent) than the number of available positions and was exactly one-fourth (25.0 percent)

of the number that would be open if the quality of school programs and services had been raised to minimum levels in fall 1979.

The conclusion that supply is larger than demand for beginning teachers is supported by the employment status of 1978 graduates completing preparation to enter teaching. Among those for whom follow-up information was reported, 50.1 percent secured teaching positions (54.1 percent of those prepared for elemenary; 44.8 percent, for secondary; and 59.4 percent, for special education assignments). Institutions reported the employment status, as of November 1, 1978, of all graduates who had completed preparation to enter teaching in 1978. Reports were received from every state except California and Texas. Information was reported for less than half of the graduates completing preparation in Alaska, the District of Columbia, Florida, and Kentucky. Overall, follow-up information was reported for 72.7 percent of the 1978 graduates prepared to enter teaching.

A report of the percents of teacher education graduates entering teaching in each of the past 12 years is given in Table 4 (column 7). The percents obtaining employment as teachers in 1978 are slightly higher than those during each of the preceding five years but are considerably lower than the levels observed before 1979.

Table 4 (column 9) shows that a near-record 11.6 percent of 1978 graduates entered other gainful employment. Also, column 8 shows that teacher education graduates seeking employment as teachers in the November following graduation declined to 7.6 percent in 1978. These trends, accompanying other evidence cited on pages 5-6 about recent reductions in the attractiveness of salaries paid to beginning teachers, indicate that larger proportions of teacher education graduates would be available to enter teaching if salaries and working conditions were improved.

Supply and Demand by Region—The percents of teacher education graduates who entered teaching in the fall following graduation are one indication of the differences in supply-demand conditions among the states. However, because these percentages may be influenced by factors other than supply and demand, the differences must be treated in very general terms.

Use of one rate of teacher turnover (applied to the number of teachers and the state change in the total number of teachers employed) makes it possible to estimate the numbers of jobs that may be open to beginning teachers in each state. Comparison of this estimate of demand to the number of teacher education graduates in each state provides an additional estimate of the relative adequacy of the supply of beginning teachers.

These procedures provide two widely differing estimates of the relative status of a given state in the adequacy of its supply of teacher education graduates. Further, neither of these procedures identifies the states that are relatively well-supplied or undersupplied with qualified teacher education graduates as reported by the state director of teacher education and certification (in the next section of this report). Therefore, this Research Memo does not contain state and regional estimates of the relative adequacy of teacher supply and demand.

Supply and Demand by Assignment—Supply and demand estimates for beginning teachers by subject assignment are listed in Table 1 (columns 3 and 4). The supply for a given assignment is 84.5 percent of the graduates prepared for elementary-level assignments; 71.5 percent, for secondary-level assignments; and 77.0 percent, for special education assignments. The demand for each assignment is estimated by apportioning the total demand for the level in which the assignment is classified on the basis of the percentage distribution of the number of beginning teachers among these assignments reported by 13 states last year.

The supply of prospective teachers from the 1979 class to fill jobs open to beginning teachers in fall 1979 exceeded the demand in all assignment areas, except agriculture and trade-industrial-vocational-technical. Many graduates prepared to teach art, music, foreign language, or health and physical education at the secondary level probably are qualified to teach the subject at either the secondary or elementary level. Also, data on the demand for new elementary teachers by subject may not be as accurate as data for other assignment areas because of state differences in school organization and record keeping for elementary school teachers. Therefore, the most accurate way to evaluate the supply-demand condition of these elementary school assignments may be to review the combined elementary and secondary school data.

The estimate of an undersupply of graduates who were prepared to enter trade-industrial-vocational-technical positions in secondary schools is of questionable accuracy because (a) teachers entering these assignments may not come from the current graduating class (work experience in the specific occupation or technology may be required), (b) the wide variety of occupations in this category makes it difficult to identify which programs of teacher preparation should be enlarged, and (c) a relatively small number of teachers are involved in this assignment area (the open positions may be

filled by a small proportion of those graduates prepared for more than one assignment who have been listed as completing preparation for other assignments).

Among the assignment areas in which reasonably accurate estimates can be made, the supply is least adequate in trade-industrial, agriculture, industrial arts, mathematics, natural and physical sciences, special education, and distributive education.

Subjects or assignments in which the supply most widely exceeds actual demand include social studies, physical and health education, art, foreign languages, home economics, and elementary regular instruction.

Conditions Reported by States—A special survey of state directors of teacher education and certification was conducted in spring 1980 to obtain current state-by-state estimates about (a) the general status of teacher supply and demand, (b) the change, if any, in the factors that influence supply and demand, (c) conditions in fall 1979 as compared to those in fall 1978, and (d) the subject areas in which shortages are most widespread. The respondents gave their *general impression* about these areas and forwarded recent reports issued on this topic. Responses were received from all 50 states.

Their assessment of how the number of qualified teacher applicants compared to the number of teaching position vacancies in fall 1979 is as follows:

- 3 states – Substantial shortage of applicants (Alaska, Georgia, South Dakota)
- 6 states – Some shortage of applicants (Indiana, Missouri, New Jersey, North Dakota, South Carolina, Wyoming)
- 1 state – Sufficient applicants to fill positions (Virginia)
- 37 states – Shortage of applicants in some subject areas and an excess in others
- 1 state – Some excess of applicants (Maine)
- 2 states – Substantial excess of applicants (Massachusetts, Rhode Island).

The situation regarding qualified teacher applicants in fall 1979 compared with that in fall 1978 was reported by four states as a *much more adequate supply in fall 1979* (Alabama, Illinois, Rhode Island, South Dakota), by 26 states as *supply-demand conditions about the same both years,* by 18 states as a *less adequate supply in fall 1979,* and by two states (Georgia, Wyoming) as a *much less adequate supply in fall 1979.* None reported a *much more adequate supply in 1979.*

In 1979 the supply of teachers was smaller than that in 1978 in 36 states. In response to a query about what conditions had an unusual influence on decreasing the supply of qualified teachers this year, the following conditions were named as contributing to a lower supply in 1979.

Condition contributing to a smaller supply in 1979	Number of states (36) reporting condition contributed: To a small extent	To a moderate extent	To a great extent
Better opportunities in other types of employment	6	14	14
Location of vacancies not attractive	7	13	13
Fewer persons completing preparation	2	20	12
Salaries and benefits not attractive to beginning teachers	7	13	8
Fewer QUALIFIED persons completing preparation	6	14	7
Salaries and benefits not attractive to experienced teachers	9	12	7
Working conditions less attractive in teaching	12	9	7
Fewer former teachers applying to reenter active employment	12	11	4
Fewer teachers moving into state	9	7	0

The demand for teachers was reported to be greater in 1979 than in 1978 by 22 states. *Added curricular offerings and programs* was reported by nine states to have contributed to either a moderate extent (four states) or a great extent to this increase. *Larger number of teachers not returning to their positions* was also reported by nine states to have contributed to either a moderate extent (four states) or a great extent to this increase. *Increased school enrollment* was reported by four states to have contributed to either a moderate extent (three states) or great extent to this increase. One state reported that *reduction in class size* contributed to a great extent to the increase in demand for teachers in 1979.

The number of states in which school districts are reported to have faced *great difficulty* in filling teaching positions in fall 1979 and in which school districts had to employ persons with substandard qualifications are summarized by assignment area in Table 1 (columns 7 and 8). Respondents were given two other options for reporting the degree of difficulty faced by their school systems in filling positions: *little or no difficulty* and *some difficulty.*

The state department of education respondents reported supply-demand conditions as follows for three specialized assignment areas:

Type of assignment	Number of states reporting school systems generally: Had some difficulty in filling positions	Had great difficulty in filling positions	Had to employ persons with substandard qualifications
Remedial reading, speech correction, etc.	27	11	8
Students requiring bilingual instruction	21	11	5
Educationally disadvantaged students	14	9	6

Retrospect and Prospect

Reports of local or regional shortages of qualified beginning teacher applicants accompanied by predictions of severe teacher shortages in the mid-1980's may be evaluated through a review of supply-demand estimates and projections. Table 4 presents recent and projected teacher supply and demand and statistics on the placement of graduates who have completed preparation to enter teaching in each of the past 12 years.

The number of students graduating with minimum qualifications for entry into public school teaching revised from estimates reported in previous NEA Research Memos appears in column 2. The number of graduates shown for 1980-81 and subsequent years is 17.0 percent of NCES projections of those receiving the bachelor's and first professional degrees.

The percents of these graduates completing minimum certification requirements for entering teaching have decreased from 34.1 percent in 1972 to 17.3 percent in 1979. This reduction follows the decrease in the proportion of college freshmen reporting a career objective of teaching, which was 22.0 percent in fall 1968 and 6.5 percent in fall 1975. Between 1974 and 1979 the percents of freshmen considering a teaching career have fluctuated between 6.2 and 8.0 percent, and the total number of college freshmen has not varied widely. Therefore, the annual numbers seem likely to stabilize for about five years.

Listed in column 3 are the numbers of graduates that would be observed if those prepared to teach continued to be 37.2 percent of all bachelor's and first professional degree graduates (the percent observed in 1967). This provides an estimate of the growth in the number of graduates who would elect to enter teaching if attractive jobs were readily available. The number of 1979 graduates prepared to teach is less than half the number who would be graduating if the 1967 proportion of all bachelor's and first professional degree graduates were prepared to teach.

The estimated number applying for teaching jobs (column 4) in years before 1972-73 is 75.0 percent and since then has been 77.0 percent of the graduates prepared to teach—the same proportion used to estimate the present supply in Tables 1 and 3.

The annual estimated demand for beginning teachers (column 5) illustrates the trend in the annual numbers of jobs open over the entire period. The numbers shown for 1979 are approximately equal to those listed in Tables 1 and 3. The numbers listed for preceding years, however, vary from published figures because of gradual reductions in teachers' job-separation rates in the early 1970's and the use of final NCES figures for total employment (Table 4) instead of NEA Research estimates used in the annual reports. The estimates are based on the increase or decrease in the total number of teaching positions plus a net turnover rate ("teachers leaving" minus "teachers returning after at least one year away") of 5.5 percent for 1971-72 and preceding years and 4.4 percent for years since 1971-72.

The increase of 23,000 teachers in fall 1977 may be an error because it is preceded by and followed by annual decreases of 10,000 teachers. For each year since 1976 the demand for beginning teachers has primarily resulted from the replacement of teachers leaving active employment. To obtain the demand estimate between 1976 and 1983, the numbers estimated by the net loss of 4.4 percent of the teachers employed the preceding year have been reduced further by the decrease in the total number employed for the given year. The upswing in demand for beginning teachers in 1982 reflects the beginning of less-severe annual reductions in the total of teachers employed. Jobs for beginning teachers to fill added positions are projected to occur annually for several years beginning in 1984-85.

The percents listed in column 6 show the trend from near balance in supply and demand for beginning teachers in the late 1960's to an annual oversupply during the 1970's and early 1980's, despite the severe reductions during the middle 1970's in the annual numbers graduating with qualifications for entry into teaching.

Placement success in teaching jobs (column 7) reflects the rise in the supply-demand ratio, with the percents entering teaching jobs remaining far below the late 1960's level throughout the 1970's. The percents of graduates seeking teaching jobs on

November 1 following graduation have been above 7 percent each year since 1971-72 (column 8), which is three or four times as high as reported immediately before 1970-71. The numbers entering gainful employment outside teaching have been 9 percent or higher since 1973-74 (column 9), which is more than twice as high as reported before 1970. In the institutions reporting follow-up data, the percent of teacher education graduates for whom the institution had no information (column 10) has increased from 15 percent in the late 1960's to more than 20 percent each year in the 1970's. The extent that the statistics in columns 7 to 10 represent all graduates prepared to teach may be estimated from column 11, which shows the percents of graduates prepared to teach for whom institutions reported follow-up data.

The overall numbers expected to complete preparation for public school teaching for each of at least the next four years are likely to be adequate for the number of available teaching jobs. The projections are tentative and beyond 1983-84 can be influenced significantly by small changes in percents of graduates prepared to teach, the graduates' interest in seeking teaching positions, availability of previous years' graduates who were unable to obtain teaching jobs immediately after graduation, numbers of teachers separating from employment, progress toward improved school programs and staffing, attractiveness of teaching as a profession, willingness of school systems to employ former teachers, the birth rate, and job market conditions for college graduates as a whole.

The upturn in numbers of jobs for beginning elementary school teachers in 1983 should improve the employment outlook for present college freshmen planning to teach at this level. Also, present high school students should be advised that when they graduate from college they will have enlarged opportunities for employment in elementary school teaching.

In summary, scant evidence exists that immediate expansion is needed in the numbers of college students preparing to enter teaching. In fact, this would likely contribute to a further decline in the percents of teacher education graduates who are successful in obtaining employment in the career for which they have prepared.

The appropriate response to some school system reports of increased difficulties in locating qualified applicants for teaching jobs seems to be to improve the mix of present graduates among the assignment fields and to improve the attractiveness of teaching as a career.

TABLE 2.–DEMAND FOR NEW TEACHERS BASED ON THE QUALITY CRITERION, 1979

Source of demand	Estimated demand for new teachers		
	Elementary	Secondary	Total
1	2	3	4
Enrollment change and trends toward improved staffing	−5,300	−6,250	−11,550
Teacher turnover	70,050	59,500	129,550
Temporary replacement of teachers having substandard qualifications	950	3,250	4,200
Reduction in number of overcrowded classes	156,900	155,850	312,750
Enlarged numbers enrolled in special education	50,000	14,000	64,000
Enlarged numbers enrolled in kindergarten and nursery school	12,400	...	12,400
Reduction in number of misassigned teachers	20,800	30,300	51,100
Enlargement of school offerings	1,000	50,000	51,000
TOTAL	306,800	306,650	613,450

TABLE 1.–SUPPLY OF AND DEMAND FOR BEGINNING TEACHERS IN PUBLIC SCHOOLS BY TYPE OF ASSIGNMENT, FALL 1979

Assignment area	Estimated number completing preparation to teach	Estimated supply	Estimated demand	Supply minus demand	Supply as percent of demand	Number of states reporting: Great difficulty in filling positions	Number of states reporting: General employment of persons with substandard qualifications
1	2	3	4	5	6	7	8
ELEMENTARY TOTALS	79,800	66,400	38,650	27,750	171.8	...	...
Regular instruction	62,300	52,700	28,800	23,900	183.0	1	1
Art	1,000	800	600	200	133.0	[a]	[a]
Foreign language	100	100	50	50	200.0	[a]	[a]
Music	900	700	1,500	–800	46.7	[a]	[a]
Physical and health education	1,200	1,100	1,500	–400	73.3	[a]	[a]
Special education	14,300	11,000	6,200	4,800	177.4	27	16
SECONDARY TOTALS	93,100	67,100	36,100	31,000	185.9	...	...
Agriculture	900	700	700	0	100.0	18	7
Art	4,800	3,400	1,150	2,250	295.7	1	0
Business education	4,700	3,400	1,750	1,650	194.3	7	3
Distributive education	500	400	300	100	133.3	9	1
English language arts (total)	13,800	9,900	5,800	4,100	170.7	3	1
Foreign languages (total)	4,500	3,200	1,100	2,100	290.9	3	3
Home economics	4,100	2,900	1,500	1,400	193.3	2	0
Industrial arts	3,100	2,200	1,200	1,000	183.3	27	12
Mathematics	6,000	4,300	3,150	1,150	136.5	30	15
Music	4,900	3,500	2,150	1,350	162.8	2	1
Physical and health education–boys	7,700	5,500	1,600	3,900	343.8	1	0
Physical and health education–girls	5,700	4,000	1,600	2,400	250.0	0	0
Natural and physical sciences (total)	5,800	4,100	3,100	1,000	132.3	18	12
Social sciences (total)	16,100	11,500	3,200	8,300	359.4	1	0
Trade, industrial, vocational, technical	600	400	2,000	–1,600	20.0	12	5
Other secondary subjects	900	700	1,100	–400	63.6	[a]	[a]
Special education	9,000	7,000	4,700	2,300	148.9	32	20
TOTAL: Elementary and Secondary	172,900	133,500	74,750	58,750	178.6	...	...

[a]Not included in survey.

See Table 2 on p. 13.

Definitions of Terms Used in This Study

Quality Criterion Estimate: The number of teachers needed to attain a minimum level of quality in public schools this year.

Adjusted Trend Criterion Estimate: The number of teaching positions that will be filled.

Beginning Teacher: A person entering active employment as a full-time teacher for the first time.

Re-Entering Teacher: A person re-entering active status who was not employed as a full-time teacher during the preceding school year.

New Teacher: A person entering or re-entering active status who was not employed as a full-time teacher during the preceding school year. (The demand for new teachers is the sum of the demand for beginning and the demand for re-entering teachers.)

TABLE 3.–SUPPLY AND DEMAND FOR PUBLIC SCHOOL TEACHERS, FALL 1979

Level and category of personnel	Supply	Demand to achieve minimum quality (Quality Criterion Estimate)			Actual demand (Adjusted Trend Criterion Estimate)		
		Demand	Supply minus demand	Supply as percent of demand	Demand	Supply minus demand	Supply as percent of demand
1	2	3	4	5	6	7	8
Elementary schools							
Beginning teachers	66,400	226,800	−160,400	29.3	38,650	27,750	171.8
Re-entering teachers	80,000	80,000	0	100.0	26,100	53,900	306.5
Total new teachers	146,400	306,800	−160,400	47.7	64,750	95,050	246.8
Secondary schools							
Beginning teachers	67,100	266,650	−199,550	33.6	36,100	31,000	185.9
Re-entering teachers	40,000	40,000	0	100.0	17,150	22,850	233.2
Total new teachers	107,100	306,650	−199,550	53.7	53,250	53,850	201.1
Total Elementary and Secondary							
Beginning teachers	133,500	493,450	−359,950	27.1	74,750	58,750	178.6
Re-entering teachers	120,000	120,000	0	100.0	43,250	76,750	277.5
TOTAL	253,500	613,450	−359,950	25.0	118,000	135,500	214.8

TABLE 4.–TRENDS IN TEACHER SUPPLY AND DEMAND

Session	Previous year's graduates prepared to enter teaching (in thousands)		Estimated numbers of new graduates (in thousands)		Supply as percent of demand	Percent of previous year's teacher education graduates on November 1				
	Actual and projected	Estimated from 1967 proportion	Applying for teaching jobs	Receiving teaching jobs		Employed as teachers	Seeking a teaching job	Otherwise gainfully employed	Status unknown	With follow-up information reported
1	2	3	4	5	6	7	8	9	10	11
1967-68	220	220	164	164	100.0	70.0	0.9	4.2	15.5	83.8
1968-69	233	248	175	183	95.6	70.5	1.6	3.8	14.8	79.2
1969-70	264	284	199	184	108.2	67.3	2.5	4.3	16.8	81.0
1970-71	284	308	213	159	134.0	60.1	4.6	5.8	18.8	88.0
1971-72	314	326	236	115	205.2	53.3	7.6	6.4	22.5	82.0
1972-73	317	346	244	131	186.3	50.9	10.1	9.7	20.6	81.2
1973-74	313	362	242	128	189.1	49.8	9.4	9.5	23.1	77.3
1974-75	279	372	215	121	177.1	47.8	9.1	10.3	24.0	84.7
1975-76	238	364	184	126	146.0	45.7	10.6	10.1	25.3	86.4
1976-77	222	368	171	87	196.6	47.4	11.7	11.0	21.4	67.3
1977-78	194	366	149	119	125.2	49.4	9.1	11.8	21.1	69.3
1978-79	181	367	139	87	159.8	50.1	7.6	11.6	22.7	72.7
1979-80	173	372	133	67	198.5	...	...	....	...	...
Projected										
1980-81	173	378	133	67	198.5					
1981-82	174	380	134	67	200.0					
1982-83	176	385	136	70	194.3					
1983-84	175	382	135	85	158.8					
1984-85	172	377	132	98	134.7					
1985-86	169	370	130	110	118.2					
1986-87	169	369	130	120	108.3					
1987-88	165	361	127	123	103.3					